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EXAMINER	
THAI, CUONG T	

ART UNIT	PAPER NUMBER
2173	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/932,713	JUN ET AL.	
	Examiner	Art Unit	
	CUONG T THAI	2173	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *None.* is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

PART III. DETAILED ACTION

1. Claims 1-27 are presented for examination.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-10 and 12-27 are rejected under 35 U.S.C. 103(a) as being unpatentably over Dakss et al. (USPN: 6,642,940) hereinafter Dakss in view of Ratakonda et al. (USPN: 5,956,026).

As per claims 1 (method) and 18 (system), Dakss discloses a method for skimming video data wherein the video data comprises a plurality of scenes as the technique of Object 5 Sandra Hair and Object 6 Cecil Suit (see Fig. 2), comprising the steps of:

Obtaining a plurality of shots for each scene using a shot segmentation and forming a structure information index corresponding to each shot is taught by Dakss as the technique of Object 5 includes Shots 22 and 26, Object 6 includes shots 23 and 25 (see Fig. 2) and each frame of a shot is analyzed and segmented into regions, these region identities through the action of the author, who identifies and labels them (see col. 3 line 66 to col. 4 line 2);

Selecting at least one shot from each scene based on the structure information index is taught by Dakss as the technique of each frame of a shot is analyzed and segmented into regions, these region identities through the action of the author, who identifies and labels them (see col. 3 line 66 to col. 4 line 2);

Dakss, however, does not disclose the limitations of selecting at least one section from the selected shot and reproducing selected sections from each scene to skim the video data.

Ratakonda discloses the limitations of selecting at least one section from the selected shot and reproducing selected sections from each scene to skim the video data as the technique of determining the number of keyframes to be allocated within each shot (see col. 2, lines 19-21) and constructing a hierarchical summarization with multiple levels wherein levels may in terms of detail of frames (see col. 2, lines 31-33).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include Ratakonda teachings of selecting at least one section from the selected shot and reproducing selected sections from each scene to skim the video data into that of Dakss' invention. By doing so, the system would be enhanced by allowing user to select any number of keyframes or section within the selected shot prior to reproduce a video sequence. Thus, the system would provide an enhanced editing tool to its end user.

As per claims 17 (method), 22 (method), and 27 (system); due to the similarity of each of these claims to that of claim 1; these claims are therefore rejected for the same reasons applied to claim 1.

As per claim 19, due to the mostly similarity of this claim to that of claim 1, except for a video skimming apparatus for searching and browsing digital video data comprising of a user interface for inputting an external control information. The limitation of a video skimming apparatus for searching and browsing digital video data comprising of a user interface for inputting an external control information are taught by Dakss as the technique of HyperActive: An Automated Tool for Creating Hyperlinked Video (see col. 4, lines 26-27), which facilitates rapid index searching to identify previously classified objects as candidate matches to a new object (see col. 3, lines 3-5), and user interface 550 generates words or graphic images on display 534 to prompt action by the user, and accepts user commands from keyboard 530 and position pointing device (see col. 10, lines 51-54). This claim is therefore rejected for the reasons as set forth above.

As per claims 2 (method) and 23 (method), the limitation of structural information index includes at least one of scene information, shot information and temporal information is taught by Dakss as the technique of scene information of Object 5 Sandra Hair and Object 6 Cecil Suit (see Fig. 2) and raw video is first "temporally segmented", i.e., broken up into its constituent shots. Differences between pixel values in temporally adjacent frames are computed, summed, and compared to a threshold value. If the threshold is exceeded, the two frames are likely to be on either side of a shot boundary. If not, they are probable both within the same shot (see col. 4, lines 30-36). These claims are therefore rejected for the reasons as set forth above.

As per claims 3 (method) and 24 (method), Dakss discloses the limitation of wherein the scene information includes a logical story unit and the shot information includes a physical editing unit as the technique of Scene information of Objects 5 and 6 are stored as level 1 and the second level of shot information of shots 22 and 26 under Object 5 and shots 23 and 25 under Object 6, respectively, (see Fig. 2).

Dakss, however, does not disclose the limitation of temporal information includes information concerning start and end of each shot.

Ratakonda discloses the limitation of temporal information includes information concerning start and end of each shot as the technique of temporal nature of video sequence (see col. 13, line 39) which including the step of Detect Shot Boundary 38 (see Fig. 4) or the user may manually specify the beginning and ending frames (see col. 5, lines 39-40).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include Ratakonda teaching of temporal information includes information concerning start and end of each shot into that of Dakss' invention. By doing so, the system would be enhanced by providing more information of shot boundary to its end user.

As per claims 4 (method) and 25 (method), Dakss discloses the limitation of wherein when shots are being selected from each scene, selection of multiple shots having similar properties is minimized as the technique of **a "shot" refers to a sequences of successive frames** created by a single camera (see col. 3, lines 63-64), raw video is first "temporally segmented", i.e., broken up into its constituent shots. Differences between pixel values in temporally adjacent frames are computed, summed, and compared to a threshold value. If the threshold is exceeded,

the two frames are likely to be on either side of a shot boundary. If not, they are probable both within the same shot. **Once this process is repeated for all pairs of temporally adjacent frames, it is possible to identify and track the objects that appear in each shot** (see col. 4, lines 30-38). These claims are therefore rejected for the reasons as set forth above.

As per claim 5, Dakss discloses the invention substantially as claimed above. Dakss, however, does not disclose the limitation of shots to be used for skimming are selected by giving a higher weight value to shots located at a latter part of each scene.

Ratakonda discloses the limitation of shots to be used for skimming are selected by giving a higher weight value to shots located at a latter part of each scene as the technique of in an actual GUI implementation, the children-parent relationships may be expitly indicated during display (see col. 5, lines 54-56).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include Ratakonda teaching of skimming are selected by giving a higher weight value to shots located at a latter part of each scene by parent-child relationship into that of Dakss' invention. By doing so, the system would be enhanced by providing more weighted information in term of parent-child hierarchical relationship to its end user.

As per claims 6 (method) and 26 (method), Dakss discloses the invention substantially as claimed above. Dakss, however, does not disclose the limitation of when selecting at least one section from the selected shot, the selected section is from at least one of front section, rear section, center section of the selected shot.

Ratakonda discloses the limitation of when selecting at least one section from the selected shot, the selected section is from at least one of front section, rear section, center section of the selected shot as the technique of the user may manually specify the beginning and ending frames (see col. 5, lines 39-40).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include Ratakonda teaching of when selecting at least one section from the selected shot, the selected section is from at least one of front section, rear section, center section of the selected shot into that of Dakss' invention. By doing so, the system would be enhanced by providing an enhanced tool for video editing tool to its end user.

As per claim 7, Dakss discloses the invention substantially as claimed above. Dakss, however, does not disclose the limitation of wherein each reproduction length of selected sections from selected shots is the same.

Ratakonda discloses the limitation of wherein each reproduction length of selected sections from selected shots is the same as the technique of shot boundary detection 38 is performed using a threshold method, where differences between histograms of successive frames are compared. Given total number of keyframes 40, each shot is assigned a number of keyframes 42 depending on the action within the shot, according to well known technique (see col. 4, lines 51-57).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include Ratakonda teaching of wherein each reproduction length of selected sections from selected shots is the same into that of Dakss' invention. By doing so, the

system would be enhanced by reproducing the video has same length to the selected sections of keyframes. Thus, the system would provide an enhanced tool for video editing tool to its end user.

As per claim 8, Dakss discloses the invention substantially as claimed above. Dakss, however, does not disclose the limitation of wherein if the reproduction length of the selected section is larger than a shot length of the corresponding selected shot, then the reproduction length of the selected section is decreased to be less than or equal to the shot length.

Ratakonda discloses the limitation of wherein if the reproduction length of the selected section is larger than a shot length of the corresponding selected shot, then the reproduction length of the selected section is decreased to be less than or equal to the shot length as the technique of Compressed Video Input wherein available video streams are in a compressed format for compact storage. The method may be extended to a compressed bitstream in such a way as to extract keyframes while performing minimal decoding (see col. 14, lines 15-23).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include Ratakonda teaching of wherein if the reproduction length of the selected section is larger than a shot length of the corresponding selected shot, then the reproduction length of the selected section is decreased to be less than or equal to the shot length by technique of compressing video input into that of Dakss' invention. By doing so, the system would be enhanced by performing minimal decoding. Thus, the system would be enhanced by concurrently increases its speed when the system would minimizes decoding step.

As per claim 9, Dakss discloses the invention substantially as claimed above. Dakss, however, does not disclose the limitation of wherein each section comprises a plurality of frames and each reproduction length of selected sections from selected shots is chosen in response to a dissimilarity factor of neighboring frames.

Ratakonda discloses the limitations of wherein each section comprises a plurality of frames and each reproduction length of selected sections from selected shots is chosen in response to a dissimilarity factor of neighboring frames as the technique of if a shot has n frames and K frames are to be allocated, every (n/K) th frame is selected as a keyframe (see col. 7, lines 47-49) and shot boundary detection 38 is performed using a threshold method, where differences between histograms of successive frames are compared. Given total number of keyframes 40, each shot is assigned a number of keyframes 42 depending on the action within the shot, according to well known technique (see col. 4, lines 51-57).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include Ratakonda teachings of wherein each section comprises a plurality of frames and each reproduction length of selected sections from selected shots is chosen in response to a dissimilarity factor of neighboring frames into that of Dakss' invention. By doing so, the system would be enhanced by providing an enhanced video editing tool in term of comparing a desired keyframe and its successive frames.

As per claim 10, Dakss discloses the invention substantially as claimed above. Dakss, however, does not disclose the limitations of wherein the dissimilarity factor is determined in

response to at least one of image, motion and audio similarities in individual shots, and the reproduction length of selected section is adjusted in response to the dissimilarity factor.

Ratakonda discloses the limitations of wherein the dissimilarity factor is determined in response to at least one of image, motion and audio similarities in individual shots, and the reproduction length of selected section is adjusted in response to the dissimilarity factor as the technique of Using Motion Characteristic for Summarization, wherein provide an option for the pan frames to be converted into an image mosaic for viewing purposes since detection of pan and zoom both involve computing motion vectors (see col. 11, lines 27-33) and Compressed Video Input wherein available video streams are in a compressed format for compact storage. The method may be extended to a compressed bitstream in such a way as to extract keyframes while performing minimal decoding (see col. 14, lines 15-23).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include Ratakonda teachings of wherein the dissimilarity factor is determined in response to at least one of image, motion and audio similarities in individual shots, and the reproduction length of selected section is adjusted in response to the dissimilarity factor into that of Dakss' invention. By doing so, the system would be enhanced by providing an enhanced of video editing tool to its end user.

As per claim 12, due to the similarity of this claim to that of claim 8, this claim is therefore rejected for the same reason applied to claim 8.

As per claim 13, the limitation of reproduction is varied in response to an external input is taught by Dakss as the technique of user interface 550 generates words or graphic images on display 534 to prompt action by the user, and accepts user commands from keyboard 530 and position pointing device (see col. 10, lines 51-54). This claim is therefore rejected for the reasons as set forth above.

As per claim 14, Dakss discloses the invention substantially as claimed above. Dakss, however, does not disclose the limitations of wherein the selected sections is reproduced at a high speed by increasing a number of frames to be decoded per unit time.

Ratakonda discloses the limitations of wherein the selected sections is reproduced at a high speed by increasing a number of frames to be decoded per unit time as the technique of the computation performance of the keyframe generation depends heavily upon the hard disk access speed of the computer used to practice the method of the invention. For the example, "real time processing" means the ability to process 30 frames per second at a given resolution. For a 300 frame quarter common intermediate format color sequence (176x144 resolution), it was found that construction of the histograms took 11 seconds, while the rest of the processing took less than a second on a SUN Ultra SPACR-2. Thus, provided that histogram computation may be achieved in real time. It should be easy to achieve real time hierarchical keyframe generation. It may also be note that the processing after computation of the histograms is dependent on the actual frame resolution, thus the amount taken to process a 300 frame QCIF sequence is the same as that of processing a sequence at 1024x780 resolution, provided that the histograms of eah frame have been pre-computed (see col. 13 line 59 to col. 14 line 9).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include Ratakonda teaching of wherein the selected sections is reproduced at a high speed by increasing a number of frames to be decoded per unit time into that of Dakss' invention. By doing so, the system would be enhanced by providing a high speed of reproducing keyframe to its system. Thus, the system would save time consumption to its end user.

As per claim 15, due to the partly similarity of this claim to that of claim 9, this claim is therefore rejected for the same reason applied to claim 9.

As per claim 16, Dakss discloses the invention substantially as claimed above. Dakss, however, does not disclose the limitation of when the video data uses a coding scheme utilizing interframe compression, then I frames are selected for obtaining frame data for decoding only corresponding frames.

Ratakonda discloses the limitation of when the video data uses a coding scheme utilizing interframe compression, then I frames are selected for obtaining frame data for decoding only corresponding frames as the technique of the video browsing method described herein may have applications which go beyond simply providing an effective user interface for multi-media manipulation. It provides an understanding of the temporal nature of the video sequence, which may be potentially employed in second generation video coding system. A hierarchical of keyframes may be used in designing encoders which is intelligently, and more importantly, computationally efficiently, adapt to the nature of the temporal video stream thus provide higher

quality while utilizing lesser resources. Information on how to utilize a hierarchical of video frames in improving compression is available in the literature, where the multi scale nature of a segmentation algorithm is exploited to obtain lostless still image compression (see col. 13, lines 36-52).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include Ratakonda teaching of when the video data uses a coding scheme utilizing interframe compression, then I frames are selected for obtaining frame data for decoding only corresponding frames into that of Dakss' invention. By doing so, the system would be enhanced by adapting to the nature of the temporal video stream thus provide higher quality while utilizing lesser resources and to obtain lostless still image compression to its end user.

As per claim 20, Dakss discloses the invention substantially as claimed above. Dakss, however, does not disclose the limitation of wherein the user interface unit comprises a unit for designating a summary level as a degree of video skimming.

Ratakonda discloses the limitation of wherein the user interface unit comprises a unit for designating a summary level as a degree of video skimming as the technique of hierarchical, multi-level summarization facilitates an effective way of visual interactive presentation of video summary to the user. The user may interact with the summary via a graphical user interface, for refining the summary, visualizing different levels of the summary (see col. 3, lines 52-56).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include Ratakonda teaching of wherein the user interface unit comprises a

unit for designating a summary level as a degree of video skimming into that of Dakss' invention. By doing so, the system would be enhanced by providing multi-level summarization to the user wherein the user may interacts with the summary via a graphical user interface, for refining the summary and visualizing at the different levels of the summary based on user desired task. Thus, the system would provide an enhanced tool to its end user.

As per claim 21, Dakss discloses the invention substantially as claimed above. Dakss, however, does not disclose the limitations of wherein the control unit reads the structure information index related to shot segmentation information and shot clustering information from an index file according to a skimming condition by using the external control information, calculates segments to be reproduced conforming to the video skimming condition, reproduces the corresponding segments from the video data, and outputs to the display unit.

Ratakonda discloses the limitations of wherein the control unit reads the structure information index related to shot segmentation information and shot clustering information from an index file according to a skimming condition by using the external control information, calculates segments to be reproduced conforming to the video skimming condition, reproduces the corresponding segments from the video data, and outputs to the display unit as the technique of a video sequence may be indexed on the basis of its summary frames (see col. 4, lines 17-18), the hierarchical approach allows the user quickly to browser through a collection of video sequences by considering their most compact summaries 22, with an option of accessing a finer summary 24, 26, if the content of the most compact summary is indeed interesting (see col. 4, lines 22-36), determining the number of keyframes to be allocated to each shot (see col. 6, lines

9-10), constructing a hierarchical summarization with multiple levels wherein levels may in terms of detail of frames (see col. 2, lines 31-33), and a hierarchical, multi-level summarization facilitates an effective way of visual interactive presentation of video summary to the user. The user may interact with the summary via a graphical user interface, for refining the summary, visualizing different levels of the summary (see col. 3, lines 52-56).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include Ratakonda teaching of the limitations of wherein the control unit reads the structure information index related to shot segmentation information and shot clustering information from an index file according to a skimming condition by using the external control information, calculates segments to be reproduced conforming to the video skimming condition, reproduces the corresponding segments from the video data, and outputs to the display unit into that of Dakss' invention. By doing so, the system would be enhanced by providing an enhanced video editing tool to its end user wherein the user can accessing, refining the summary and visualizing at the different levels of the summary based on user desired task.

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentably over Dakss et al. (USPN: 6,642,940) hereinafter Dakss in view of Ratakonda et al. (USPN: 5,956,026) and further in view of Boezeman et al (USPN: 6,188,396) hereinafter Boezeman.

As per claim 11 (method), Dakss-Ratakonda discloses the invention substantially as claimed above. Ratakonda discloses motion in individual shots, and the reproduction length of selected section is adjusted in response to the dissimilarity factor as the technique of Using Motion Characteristic for Summarization, wherein provide an option for the pan frames to be

converted into an image mosaic for viewing purposes since detection of pan and zoom both involve computing motion vectors (see col. 11, lines 27-33) . Dakss-Ratakonda, however, does not disclose the limitation of wherein the image, motion and audio similarities in the selected shot representative of the selected scene includes similarities in frames, motion vectors and audio data with different time positions.

Bozeman discloses the limitations of wherein the image, motion and audio similarities in the selected shot representative of the selected scene includes similarities in frames, motion vectors and audio data with different time positions as the technique of synchronization of Animation, AudioPlay, VideoPlay, and Image in the Sequence Editor versus Time axis (see Figs. 11-15).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include Boezeman teachings of wherein the image, motion and audio similarities in the selected shot representative of the selected scene includes similarities in frames, motion vectors and audio data with different time positions into that of Dakss-Ratakonda combined invention. By doing so, the system would be enhanced by allowing user to embed audio, video, image as well as animation information corresponding to a particular time factor based on user desired task. Thus, the system would provide an enhanced graphical based user interface to its end user.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicant is required under 37 C.F.R. 1.111(c) to consider these references fully

when responding to this action. The documents cited therein teach a method of using a graphical based user interface for accessing, editing and controlling multimedia information programs.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CUONG T THAI whose telephone number is (703) 308-7234. The examiner can normally be reached on 8:00 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cabeca can be reached on (703) 308-3116. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CUONG T THAI
Examiner
Art Unit 2173

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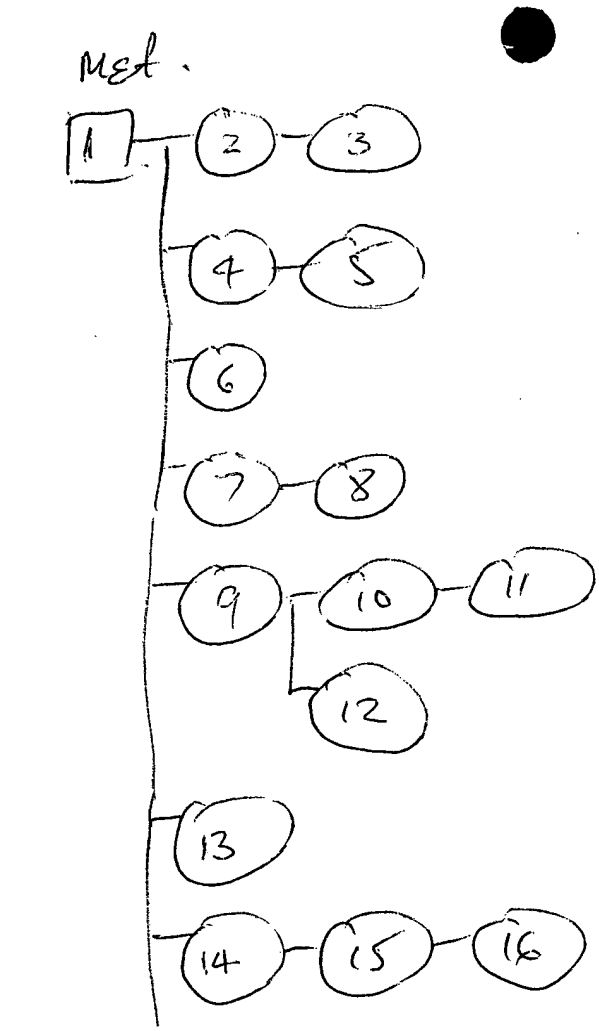
August 06, 2004.

JOHN CABECA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100



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